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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/501,269

03/28/2005

Francis Briand

Serie 5879

7498

40582

7590

05/31/2007

AIR LIQUIDE

Intellectual Property

2700 POST OAK BOULEVARD, SUITE 1800

HOUSTON, TX 77056

EXAMINER

EVANS, GEOFFREY S

ART UNIT

PAPER NUMBER

1725

MAIL DATE

DELIVERY MODE

05/31/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/501,269	Applicant(s) BRIAND ET AL.	
	Examiner Geoffrey S. Evans	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15, 17, 22, 24, 25, 28-30 and 33-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25, 28-30, 33 and 34 is/are allowed.
- 6) ☒ Claim(s) 15, 17, 22, 24 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how claim 35 further limits claim 15 since claim 15 already recites "at least one workpiece made of mild or stainless steel".

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 15, 17, 22, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faerber in U.S. Patent No. 6,281,472 in view of Hermann in WO 02/43,918, published 6 June 2002 and Banas et al. in U.S. Patent No. 4,000,392 and Arai in U.S. Patent No. 4,945,207. Faerber discloses laser welding with a helium-

nitrogen binary gas and using a laser power as high as 3 KW (see column 3, line 450 and using nitrogen gas in the range of 10-50% with the balance being helium gas (see column 2, lines 51-66), and that the workpiece can be stainless steel (see column 3, line 21) . Hermann (918) teaches that controlling and reducing plasma is mandatory at high laser performances (see lines 28 and 29 of page 10, that helium serves to suppress plasma (see page 4, line 12) and that Hermann teaches that the percentage of helium required depends upon the laser power or energy density (see the last paragraph of page 2). Banas teaches increasing the laser power up to 10 kW to increase the depth of the laser weld (see figure 4). Arai teaches an apparatus for controlling the mixing of gases (see column 3, lines 5-12) used in laser material processing. It would have been obvious to adapt Faerber in view of Hermann et al., Banas et al. and Arai to provide this to increase the laser power to increase the weld depth, to increase the proportion of helium in the gas when the laser power is increased to control the amount of plasma and to provide a gas mixer (as taught by Arai) to flexibly adjust the ratio between the two gases.

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faerber in U.S. Patent No. 6,281,472 in view of Hermann in WO 02/43,918, published 6 June 2002 and Banas et al. in U.S. Patent No. 4,000,392. Faerber discloses laser welding with a helium-nitrogen binary gas and using a laser power as high as 3 KW (see column 3, line 450 and using nitrogen gas in the range of 10-50% with the balance being helium gas (see column 2, lines 51-66). Hermann (918) teaches that controlling and reducing plasma is mandatory at high laser performances (see lines 28 and 29 of page 10, that

helium serves to suppress plasma (see page 4, line 12) and that Hermann teaches that the percentage of Helium required depends upon the laser power or energy density (see the last paragraph of page 2). Banas teaches increasing the laser power up to 10 kW to increase the depth of the laser weld (see figure 4), which includes laser welding in the range of 4 kW to 8kW. It would have been obvious to adapt Faerber in view of Hermann et al., and Banas et al. to provide this to increase the laser power to increase the weld depth, to increase the proportion of helium in the gas when the laser power is increased to control the amount of plasma, and to experimentally determine the proper ratio of gases for a laser beam at a power level of 4 kW to 8kW. (Claim 24 is now met by a method of laser beam welding with a laser beam power level of 4 kW to 8 kW with any mixture of gases of nitrogen and helium).

6. Applicant's arguments filed 14 March 2007 have been fully considered but they are not persuasive. While the remarks on 14 March 2007 state on page 8 that claim 24 is cancelled, claim 24 has in fact not been cancelled. The language in claim 15 is broad enough to include laser welding at one power level and then laser welding at another power level, with the user manually adjusting the gas mixture supplied to the welding zone. There is no language in claim 15 reciting a sensor monitoring the power level and then controlling the shielding gas mixture in response to the power level.

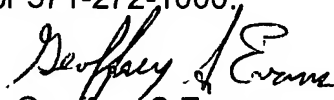
7. Claims 25, 28-30, 33 and 34 are allowed.

8. This office action is in response to the Request for Continued Examination of 14 March 2007.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey S. Evans whose telephone number is (571)-272-1174. The examiner can normally be reached on Mon-Fri 6:30AM to 4:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571)-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Geoffrey S Evans
Primary Examiner
Art Unit 1725

GSE